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EXAMINER	
KETEMA, BENYAM	

ART UNIT	PAPER NUMBER
2629	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary	Application No.	Applicant(s)	
	10/579,740	SAKAI, YOSHIKAZU	
	Examiner	Art Unit	
	BENYAM KETEMA	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 May 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *19-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *19-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 May 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *05/18/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 19-36 are presented for examination.

Priority

2. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. JP 2003-389900, filed on 11/19/2003.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 35 and 36 are rejected under 35 U.S.C. 102(e) as being anticipated by Yamamoto et al (US PG Pub 2001/0008395).

As in claim 35, Yamamoto et al discloses *a recording medium on which a computer program for causing a computer to output control information to a liquid crystal display device comprising*

- *a liquid crystal panel* (Paragraph 39 line 3 fig 1a item 1)
- *a backlight disposed at the back of the liquid crystal panel* (Paragraph 39 line 5 fig 1a item 3)
- *causing the computer to control an input level of a video signal to be inputted into the liquid crystal panel to control transmittance of the liquid crystal panel and provide a gray-level display is recorded* (Paragraph 39 and Paragraph 40 line 4, Microprocessor), *said computer program comprising the steps of:*
- *causing the computer to store in a storage unit a luminance of the backlight, in a plurality of states where the backlight has a different luminance, associated with a luminance of light emitted from the backlight through the liquid crystal panel;* (Paragraph 39- 40) discloses memory to store luminance value of the display panel in different states. The brightness rang from minimum (0%) to a maximum (100%).
- *causing the computer to set a desired luminance set value of light emitted through the liquid crystal panel;* (Paragraph 40 line 3-9, Microprocessor) discloses setting different brightness value of the liquid crystal panel.
- *causing the computer to calculate control information for controlling a luminance of the backlight, which is to be the set luminance set value, on the basis of first information stored in the storage unit;* (Paragraph 40 line 4, Microprocessor and

Paragraph 41) discloses based on previously stored value and calculated value the computer (Microprocessor) controls the luminance of the backlight.

- *causing the computer to output the calculated control information to the liquid crystal display device.* (Paragraph 40 line 4, Microprocessor and Paragraph 41 line 1-5) discloses the microprocessor (computer) outputs the calculated value to the display.

As in claim 36, Yamamoto et al discloses *the recording medium according to claim 35, wherein said computer program further comprises the steps of: causing the computer* (Paragraph 40 line 4, Microprocessor) *to store in a storage unit* (Paragraph 40 line 9,memory)*second information on a luminance of light emitted through the liquid crystal panel in each input level;* (Paragraph 39) *causing the computer* (Paragraph 40 line 4, Microprocessor) *to calculate a luminance of light emitted through the liquid crystal panel in each input level in a case of the inputted luminance set value, on the basis of the stored second information;* (Paragraph 41) *causing the computer* (Paragraph 40 line 4, Microprocessor) *to calculate a luminance to be set in each gray level in a case of the inputted luminance set value; causing the computer to calculate a luminance difference between the calculated luminance to be set in each gray level and the calculated luminance in each input level; and causing the computer to store in the storage unit an input level, which gives a minimum calculated luminance difference, associated with a gray level.* (Paragraph 39-40)

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 19 -32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawashima et al (US Pat No 6,188,380) in view of Yamaguchi (US PG Pub 2003/0231161) and further view of Someya et al (US PG Pub 2003/0231158)

As in claim 19, Kawashima et al discloses a *luminance control method for a liquid crystal display device* (Column 1 line 8- 14)*, which comprises*

- *a liquid crystal panel,* (Column 3 line 18 and fig 2 item 11)

- *backlight disposed at the back of the liquid crystal panel* (Column 3 line 20-30, fig 2 item 14)
- *a luminance detecting unit for detecting a luminance of the backlight* (Column 2 line 37-39, photodetector), discloses photodetector located near the backlight to measure the luminance of a backlight.
- *the backlight has a different luminance,* (Column 4 line 15-24) discloses the backlight has different luminance caused by backlight.
- *preliminarily storing the luminance measured in each state associated with the luminance detected by the luminance detecting unit;* (Column 4 line 15-24) discloses the backlight has different luminance caused by backlight and the MPU stores luminance measured by light sensor.
- *calculating a luminance to be detected by the luminance detecting unit, which is to be the set luminance set value, on the basis of stored luminance in each state;* (Column 4 line 40-54 and Fig 4 item SP5- SP6) discloses the use of stored luminance value and user set luminance value is compeered so that the backlight can emit desired luminescent value.
- *and controlling the luminance of the backlight so as to be the calculated luminance.* (Column 4 line 40-54 and Fig 4 item SP5- SP6) discloses the use of stored luminance value and user set luminance value is compeered so that the backlight can emit desired luminescent value.
- However Kawashima et al fails to disclose *controlling an input level of a video signal to be inputted into the liquid crystal panel to control transmittance of the*

liquid crystal panel and provide a gray-level display, measuring a luminance of light emitted from the backlight through the liquid crystal panel in a plurality of states

- Yamaguchi discloses *controlling an input level of a video signal to be inputted into the liquid crystal panel to control transmittance of the liquid crystal panel* (Paragraph 7 line 4-10) discloses that by displaying an image on display panel the transmittance of liquid crystal is changed.
- Yamaguchi discloses *provide a gray-level display,* (Paragraph 126)
- Yamaguchi further discloses *measuring a luminance of light emitted from the backlight through the liquid crystal panel in a plurality of states* (Paragraph 101-102) discloses that optical sensor measures luminescent of backlight at max and min.
- However Kawashima et al and Yamaguchi fails to disclose *the liquid crystal panel has a predetermined transmittance and setting a desired luminance set value of light emitted through the liquid crystal panel in a state where the liquid crystal panel has a predetermined transmittance.*
- Someya et al discloses *the liquid crystal panel has a predetermined transmittance* (Paragraph 118 line 15-27) discloses a predetermined transmittances value.
- Someya further discloses and *setting a desired luminance set value of light emitted through the liquid crystal panel in a state where the liquid crystal panel*

has a predetermined transmittance; (Paragraph 118) discloses that by applying a set voltage a desired predetermined transmittances value is set

Kawashima et al, Yamaguchi and Someya are analogous art because they are from the common area of luminance control of liquid crystal display using optical sensor. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine Kawashima et al display device with the optical sensor that measures luminescent of the backlight thou the panel of Yamaguchi with Someya's predetermined transmittance capability in order to achieve accurate luminance, because Yamaguchi discloses optical sensor that measures luminescent of the backlight thou the panel and Someya discloses predetermined transmittance. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the display device of Kawashima et al so that it can incorporate the capability of measuring luminescent of the backlight thou the panel and have a given predetermined transmittance value as disclosed by Yamaguchi and Someya respectively would obtain an accurate luminance of the display device.

As in claim 20, Kawashima et al , Yamaguchi and Someya discloses *the luminance control method according to claim 19,*as discussed above, but Yamaguchi and Someya fails to disclose *the luminance set value is a luminance in a state where the transmittance of the liquid crystal panel is a controllable maximum transmittance.* However, Kawashima et al discloses *the luminance set value is a luminance in a state where the transmittance of the liquid crystal panel is a controllable maximum*

transmittance. (Column 4 line 40-54 and Fig 4 item SP5- SP6) discloses the user sets the luminance value so that the maximum transmittance of the backlight can be controlled. Therefore the maximum luminance would be what the user set it as (e.g. 100% or 75% or etc)

As in claim 21, Kawashima et al, Yamaguchi and Someya discloses *the luminance control method according to claim 19,* as discussed above, but Yamaguchi and Someya fails to disclose *one state of the plurality of states is a state where the backlight has a controllable maximum luminance and another state of the plurality of states is a state where the backlight has a controllable minimum luminance.* However, Kawashima et al discloses *one state of the plurality of states is a state where the backlight has a controllable maximum luminance and another state of the plurality of states is a state where the backlight has a controllable minimum luminance* (Column 4 line 40-54 and Fig 4 item SP5- SP6) discloses the user sets the luminance value so that the maximum transmittance of the backlight can be controlled. Therefore the luminance value would be what the user sets it as to be (i.e. 100% or 75%) or etc. Since the user sets the value of the luminance of the backlight, the value that is given by the user would be the maximum and minimum transmittance of the backlight. Where in the device would be as bright or dime as the user set it as hence the set value would be the max as well as min value at the same time.

As in claim 22, Kawashima et al discloses *the luminance control* (Column 1 line 9-10) *method according to claim 20, wherein one state of the plurality of states is a state where the backlight has a controllable maximum luminance and another state of the plurality of states is a state where the backlight has a controllable minimum luminance.* (Column 4 line 40-54 and Fig 4 item SP5- SP6) discloses the user sets the luminance value so that the maximum transmittance of the backlight can be controlled. Therefore the luminance value would be what the user sets it as to be 100% or 75% or etc. Since the user sets the value of the luminance of the backlight, the value that is given by the user would be the maximum and minimum transmittance of the backlight. Where in the device would be as bright or dime as the user set it as hence the set value would be the max as well as min value at the same time.

As in claim 23, Kawashima et al , Yamaguchi and Someya discloses *the luminance control method* as discussed above, but Kawashima et al and Someya fails to disclose the limitations of claim 23. However, Yamamoto et al. discloses *the steps of: measuring a luminance of light emitted through the liquid crystal panel in each input level,* (Paragraph 39 line 3-11 discloses optical sensor fitted on the front surface of LCD measures light emitted through the LCD) *and preliminarily storing the measured luminance associated with an input level which gives the luminance; calculating a luminance of light emitted through the liquid crystal panel in each input level and a luminance to be set in each gray level in a case of the luminance set value, on the basis of the stored luminance and input level;* (Paragraph 39 line 11 – Paragraph 40 line 9)

extracting an input level, which gives a luminance substantially equal to the luminance to be set in each gray level, on the basis of the luminance in each calculated input level and the luminance to be set in each gray level, and storing the extracted input level associated with a gray level; and controlling the transmittance of the liquid crystal panel in a gray level associated with the input level of the video signal. (Paragraph 40 line 1 – Paragraph 41 line 12). Kawashima et al and Yamamoto et al are analogous art because they are from the common area of photodetector that detects the quantity of light from the backlight of a liquid crystal display apparatus, and a luminance control device using this photodetector for controlling luminance of the backlight. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references (Kawashima et al and Yamamoto et al) because Yamamoto et al suggests the application of optical sensor in front of the liquid crystal panel in order to measure luminance of light emitted through the liquid crystal panel. It also provides method for calculating the difference between the current brightness value and the specified brightness value of the liquid crystal panel. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the luminance control device of Kawashima et al by applying optical sensor as disclosed by Yamamoto et al because Yamamoto et al suggests the application of optical sensor in front of the liquid crystal panel in order to measure luminance of light emitted through the liquid crystal panel, as found in claim 23.

As in claim 24, Yamamoto et al discloses *the luminance control method* (Abstract) as

discussed above, but fails to disclose *the luminance set value is a luminance in a state where the transmittance of the liquid crystal panel is a controllable maximum transmittance.* However, Kawashima et al discloses *the luminance set value is a luminance in a state where the transmittance of the liquid crystal panel is a controllable maximum transmittance.* (Column 4 line 40-54 and Fig 4 item SP5- SP6) discloses the user sets the luminance value so that the maximum transmittance of the backlight can be controlled. Therefore the maximum luminance would be what the user set it as (e.g. 100% or 75% or etc). Kawashima et al suggests the maximum luminance can be controlled since this value varies according to the users preferences. When the user set luminance value (i.e. 75%) the controller compares the luminance value emitted out of the display and compares it with targeted value and output the targeted value (i.e. 75%), therefore the outputted value would be the controllable maximum transmittance which is set by the user. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the maximum lumens value set by the user to be the maximum lumens value of that display panel at that displaying moment as disclosed by Kawashima et al because Kawashima et al suggests the maximum luminance can be controlled since this value varies according to the users preferences.

As in claim 25, Yamamoto et al discloses *the luminance control method* (Abstract) as discussed above, but fails to disclose one state of the plurality of states is a state where the backlight has a controllable maximum luminance and another state of the plurality of states is a state where the backlight has a controllable minimum luminance. However,

Kawashima et al discloses *one state of the plurality of states is a state where the backlight has a controllable maximum luminance and another state of the plurality of states is a state where the backlight has a controllable minimum luminance.* (Column 4 line 40-54 and Fig 4 item SP5- SP6) discloses the user sets the luminance value so that the maximum transmittance of the backlight can be controlled. Therefore the luminance value would be what the user sets it as to be 100% or 75% or etc. Since the user sets the value of the luminance of the backlight, the value that is given by the user would be the maximum and minimum transmittance of the backlight. Where in the device would be as bright or dime as the user set it as hence the set value would be the max as well as min value at the same time. Kawashima et al suggests the user sets the value of the luminance of the backlight, the value that is given by the user would be the maximum and minimum transmittance of the backlight. Where in the device would be as bright or dime as the user set it as hence the set value would be the max as well as min value at the same time. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention to modify the user sets the value of the luminance of the backlight of Kawashima et al, so that the value that is given by the user would be the maximum and minimum transmittance of the backlight. Where in the device would be as bright or dime as the user set it as hence the set value would be the max as well as min value at the same time.

As in claim 26, Yamamoto et al discloses *the luminance control method* (Abstract) as discussed above, but fails to disclose *one state of the plurality of states is a state where*

the backlight has a controllable maximum luminance and another state of the plurality of states is a state where the backlight has a controllable minimum luminance. However, Kawashima et al discloses *wherein one state of the plurality of states is a state where the backlight has a controllable maximum luminance and another state of the plurality of states is a state where the backlight has a controllable minimum luminance.* (Column 4 line 40-54 and Fig 4 item SP5- SP6) Kawashima et al discloses the user sets the luminance value so that the maximum transmittance of the backlight can be controlled. Therefore the luminance value would be what the user sets it as to be 100% or 75% or etc. Since the user sets the value of the luminance of the backlight, the value that is given by the user would be the maximum and minimum transmittance of the backlight. Where in the device would be as bright or dime as the user set it as hence the set value would be the max as well as min value at the same time. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention to modify luminance value set by the user so that the maximum transmittance of the backlight can be controlled. Therefore the luminance value would be what the user sets it as to be 100% or 75% or etc. Since the user sets the value of the luminance of the backlight, the value that is given by the user would be the maximum and minimum transmittance of the backlight. Where in the device would be as bright or dime as the user set it as hence the set value would be the max as well as min value at the same time.

As in claim 27, Kawashima et al , Yamaguchi and Someya discloses *the luminance control method according to claim 19,*as discussed above, but Yamaguchi and Someya

fails to disclose the limitation of claim 27. However, Kawashima et al discloses *the steps of: measuring a luminance of light emitted through the liquid crystal panel in each input level; normalizing each measured luminance, and* (Column 39 line 3-11, discloses optical sensor fitted on the front surface of LCD measures light emitted through the LCD.) *preliminarily storing each normalized luminance associated with an input level which gives the luminance; calculating a luminance of light emitted through the liquid crystal panel in each input level and a luminance to be set in each gray level in a case of the luminance set value, on the basis of the stored luminance and input level;* (Column 39 line 11 – Column 40 line 9) *extracting an input level, which gives a luminance substantially equal to a luminance to be set in each gray level, on the basis of the luminance in each calculated input level and the luminance to be set in each gray level, and storing the extracted input level associated with a gray level; and controlling the transmittance of the liquid crystal panel in a gray level associated with the input level of the video signal.* (Column 40 line 1 – Column 41 line 12)

As in claim 28, Kawashima et al discloses *the luminance control* (Column 1 line 9-10) *method according to claim 27, wherein the luminance set value is a luminance in a state where the transmittance of the liquid crystal panel is a controllable maximum transmittance.* (Column 4 line 40-54 and Fig 4 item SP5- SP6) discloses the user sets the luminance value so that the maximum transmittance of the backlight can be controlled. Therefore the maximum luminance would be what the user set it as (e.g. 100% or 75% or etc)

As in claim 29, Kawashima et al discloses *the luminance control* (Column 1 line 9-10) *method according to claim 27, wherein one state of the plurality of states is a state where the backlight has a controllable maximum luminance and another state of the plurality of states is a state where the backlight has a controllable minimum luminance.* (Column 4 line 40-54 and Fig 4 item SP5- SP6) discloses the user sets the luminance value so that the maximum transmittance of the backlight can be controlled. Therefore the luminance value would be what the user sets it as to be 100% or 75% or etc. Since the user sets the value of the luminance of the backlight, the value that is given by the user would be the maximum and minimum transmittance of the backlight. Where in the device would be as bright or dime as the user set it as hence the set value would be the max as well as min value at the same time.

As in claim 30, Kawashima et al discloses *the luminance control* (Column 1 line 9-10) *method according to claim 28, wherein one state of the plurality of states is a state where the backlight has a controllable maximum luminance and another state of the plurality of states is a state where the backlight has a controllable minimum luminance.* (Column 4 line 40-54 and Fig 4 item SP5- SP6) discloses the user sets the luminance value so that the maximum transmittance of the backlight can be controlled. Therefore the luminance value would be what the user sets it as to be 100% or 75% or etc. Since the user sets the value of the luminance of the backlight, the value that is given by the user would be the maximum and minimum transmittance of the backlight. Where in the

device would be as bright or dime as the user set it as hence the set value would be the max as well as min value at the same time.

As in claim 31, Kawashima et al discloses *a liquid crystal display device* (Column 1 line 8-9), *which comprises*

- *a liquid crystal panel* (Column 3 line 18 and fig 2 item 11)
- *a backlight disposed at the back of the liquid crystal panel* (Column 3 line 20- -30 and fig 2 item 14),
- *a luminance detecting unit for detecting a luminance of the backlight;* (Column 2 line 37-39, photodetector), discloses photodetector located near the backlight to measure the luminance of a backlight.
- *a first storage unit for preliminarily storing first information in which the luminance detected by the luminance detecting unit, in a plurality of states* (Column 4 line 16-46) discloses that MPU (first storage) stores the luminance detected by light sensor is stored .
- *the backlight has a different luminance is associated with a luminance of light emitted from the backlight through the liquid crystal panel;* (Column 4 line 15-24) discloses the backlight has different luminance caused by backlight.
- *a first calculating unit for calculating a luminance to be detected by the luminance detecting unit, which is to be the luminance set value accepted by the accepting unit, on the basis of the first information stored in the first storage unit;* (Fig 4)

discloses that the light that is emitted from the display panel is calculated by using the stored value and comparing it with sensor value.

- *and a luminance control unit for controlling the luminance of the backlight so as to be the luminance calculated by the first calculating unit.* (Column 4 line 16-46) discloses luminance value of that is stored in the memory is compared to inputted (detected) luminance value so that the luminance of the backlight can be controlled.
- However Kawashima et al fails to disclose *controlling an input level of a video signal to be inputted into the liquid crystal panel to control transmittance of the liquid crystal panel and provide a gray-level display, measuring a luminance of light emitted from the backlight through the liquid crystal panel in a plurality of states*
- Yamaguchi discloses *controlling an input level of a video signal to be inputted into the liquid crystal panel to control transmittance of the liquid crystal panel* (Paragraph 7 line 4-10) discloses that by displaying an image on display panel the transmittance of liquid crystal is changed.
- Yamaguchi further discloses *provide a gray-level display,* (Paragraph 126)
- However Kawashima et al and Yamaguchi fails to disclose *the liquid crystal panel has a predetermined transmittance and setting a desired luminance set value of light emitted through the liquid crystal panel in a state where the liquid crystal panel has a predetermined transmittance*

- Someya et al discloses *the liquid crystal panel has a predetermined transmittance* (Paragraph 118 line 15-27) discloses a predetermined transmittances value.
- Someya further discloses *an accepting unit for accepting a desired luminance set value of light emitted through the liquid crystal panel in a state where the liquid crystal panel has a predetermined transmittance;* (Paragraph 118) discloses that by applying a set voltage a desired predetermined transmittances value is set.

Kawashima et al, Yamaguchi and Someya are analogous art because they are from the common area of luminance control of liquid crystal display using optical sensor. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine Kawashima et al display device with the optical sensor that measures luminescent of the backlight thou the panel of Yamaguchi with Someya's predetermined transmittance capability in order to achieve accurate luminance, because Yamaguchi discloses optical sensor that measures luminescent of the backlight thou the panel and Someya discloses predetermined transmittance. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the display device of Kawashima et al so that it can incorporate the capability of measuring luminescent of the backlight thou the panel and have a given predetermined transmittance value as disclosed by Yamaguchi and Someya respectively would obtain an accurate luminance of the display device.

As in claim 32, Kawashima et al , Yamaguchi and Someya discloses *the liquid crystal display device* (Column 1 line 8-9) *according to claim 31,*as discussed above, but Yamaguchi and Someya fails to disclose *the luminance detecting unit has: a photoelectric converter for converting the luminance of the backlight into an analog-type electric signal having a voltage corresponding to the luminance of the backlight; and an analog-digital converter for converting the converted analog-type electric signal into a digital-type electric signal.* However, Kawashima et al discloses*, the luminance detecting unit has: a photoelectric converter for converting the luminance of the backlight into an analog-type electric signal having a voltage corresponding to the luminance of the backlight; and an analog-digital converter for converting the converted analog-type electric signal into a digital-type electric signal.* (Column 3 line 48-63 and Fig 3 item 21 and 23) discloses luminance of the backlight that is detected by light detector is converted from analog to digital signal. Fig 3 shows the A/D and D/A converters.

8. Claims 33-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawashima et al (US Pat No 6,188,380), in view of Yamaguchi (US PG Pub 2003/0231161) and Someya et al (US PG Pub 2003/0231158) and further in view of Yamamoto et al (US PG Pub 2001/0008395).

As in claim 33, Kawashima et al, Yamaguchi and Someya discloses *the liquid crystal display device* (Column 1 line 8-9) as discussed above, but fails to disclose *first storage unit further stores second information on a luminance of light emitted through the liquid crystal panel in each input level, and the liquid crystal device further comprises: a second calculating unit for calculating a luminance of light emitted through the liquid crystal panel in each input level in a case of the luminance set value accepted by the accepting unit, on the basis of the second information; a third calculating unit for calculating a luminance to be set in each gray level in a case of the luminance set value accepted by the accepting unit; a fourth calculating unit for calculating a luminance difference between the luminance to be set in each gray level calculated by the third calculating unit and the luminance in each input level calculated by the second calculating unit; a second storage unit for storing an input level, which gives a minimum luminance difference calculated by the fourth calculating unit, associated with a gray level; and a control unit for controlling the transmittance of the liquid crystal panel in a gray level associated with the input level of the video signal.* However, Yamamoto et al discloses *the liquid crystal display device* (Paragraph 38 line 1) *according to claim 31, wherein the first storage unit further stores second information on a luminance of light emitted through the liquid crystal panel in each input level, and the liquid crystal device further comprises: a second calculating unit for calculating a luminance of light emitted through the liquid crystal panel in each input level in a case of the luminance set value accepted by the accepting unit, on the basis of the second information; a third calculating unit for calculating a luminance to be set in each gray level in a case of the*

luminance set value accepted by the accepting unit; a fourth calculating unit for calculating a luminance difference between the luminance to be set in each gray level calculated by the third calculating unit and the luminance in each input level calculated by the second calculating unit; a second storage unit for storing an input level, which gives a minimum luminance difference calculated by the fourth calculating unit, associated with a gray level; and a control unit for controlling the transmittance of the liquid crystal panel in a gray level associated with the input level of the video signal. (Paragraph 39-41) Yamamoto et al discloses previously stored brightness characteristic data is compared to luminance value that is optioned by optical sensor. This is done by the calculator and sent to the display unit so the backlight would emit appropriate luminescence value. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention to modify Yamamoto et al previously stored brightness characteristic data so that it can be compared to luminance value that is optioned by optical sensor. This is done by the calculator and sent to the display unit so the backlight would emit appropriate luminescence value.

As in claim 34, Yamamoto et al discloses *the liquid crystal display device* (Paragraph 38 line 1) as discussed above, but fails to disclose *a photoelectric converter for converting the luminance of the backlight into an analog-type electric signal having a voltage corresponding to the luminance of the backlight; and an analog-digital converter for converting the converted analog-type electric signal into a digital-type electric signal.* However, Kawashima et al discloses *a photoelectric converter for converting the*

luminance of the backlight into an analog-type electric signal having a voltage corresponding to the luminance of the backlight; and an analog-digital converter for converting the converted analog-type electric signal into a digital-type electric signal. (Column 3 line 48-63 and Fig 3 item 21 and 23) discloses luminance of the backlight that is detected by light detector is converted from analog to digital signal. Fig 3 shows the A/D and D/A converters. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention to modify luminance of the backlight of Kawashima et al that is detected by light detector so that it can be converted from analog to digital signal. Fig 3 shows the A/D and D/A converters.

Prior Art

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patent No 6,903,714 discloses a display device for displaying images is allowed to display an image with a gray level corresponding to the value of a signal inputted to the display device. The gray level relates to, for example, luminance or light transmittance. Brabander et al (US PG Pub No. 2005/0184983) discloses The present invention relates to a system and method for real time correction of light output and/or color of an image displayed on a display device of the type having a display area which has a brightness versus voltage characteristic which is dependent on temperature and ageing of the display device, such as for example LCD (liquid crystal display)

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BENYAM KETEMA whose telephone number is (571)270-7224. The examiner can normally be reached on Monday- Friday 8:00AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shalwala Bipin H can be reached on 571-272-7681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ Benyam Ketema /

Examiner, Art Unit 2629

/Bipin Shalwala/

Supervisory Patent Examiner, Art Unit 2629